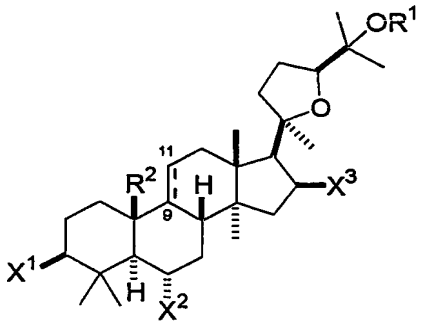
IT IS CLAIMED:

1. A method of increasing telomerase activity in a cell or tissue, comprising: identifying a cell or tissue in which an increase in telomerase activity is desired, and contacting said cell or tissue with a formulation of an isolated compound of formula I:



I

where:

each of X^1, X^2, and X^3 is independently selected from hydroxy, lower alkoxy, lower acyloxy, keto, and a glycoside;

OR^1 is selected from hydroxy, lower alkoxy, lower acyloxy, and a glycoside;

wherein any of the hydroxyl groups on said glycoside may be substituted with a further glycoside, lower alkyl, or lower acyl, such that the compound includes a maximum of three glycosides; and

R^2 is methyl and ---- represents a double bond between carbons 9 and 11; or, R^2 forms, together with carbon 9, a fused cyclopropyl ring, and ---- represents a single bond between carbons 9 and 11.

2. The method of claim 1, wherein said compound includes zero, one, or two glycosides, none of which is substituted with a further glycoside.

3. The method of claim 2, wherein said compound includes zero or two glycosides, none of which is substituted with a further glycoside.

4. The method of claim 1, wherein each said glycoside, when present, is of the D configuration.

5. The method of claim 1, wherein R^2 forms, together with carbon 9, a fused cyclopropyl ring; and ---- represents a single bond between carbons 9 and 11.

6. The method of claim 2, wherein each of X^1 and X^2 is independently selected from hydroxy, lower alkoxy, lower acyloxy, and a glycoside, and X^3 is selected from hydroxy, lower alkoxy, lower acyloxy, keto, and a glycoside.

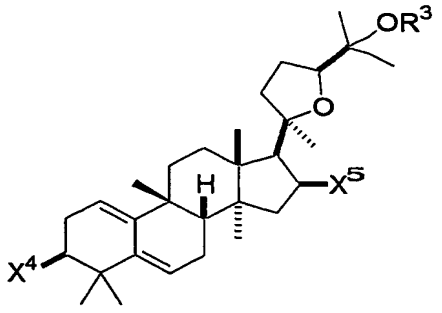
7. The method of claim 2, wherein X^1 is OH or a glycoside, each of X^2 and OR^1 is independently OH or a glycoside, and X^3 is OH or keto.

8. The method of claim 2, wherein the compound is selected from astragaloside IV, cycloastragenol, astragenol, astragaloside IV 16-one, cycloastragenol 6-β-D-glucopyranoside, and cycloastragenol 3-β-D-xylopyranoside.

9. The method of claim 8, wherein the compound is selected from astragaloside IV, cycloastragenol, astragenol, and astragaloside IV 16-one.

10. The method of claim 9, wherein said compound is astragaloside IV.

11. A method of increasing telomerase activity in a cell or tissue, comprising: identifying a cell or tissue in which an increase in telomerase activity is desired, and contacting said cell or tissue with a formulation of an isolated compound of formula II:



II

where:

each of X^4 and X^5 is independently selected from hydroxy, lower alkoxy, lower acyloxy, keto, and a glycoside, and

OR^3 is selected from hydroxy, lower alkoxy, lower acyloxy, and a glycoside, wherein any of the hydroxyl groups on said glycoside may be substituted with a further glycoside, lower alkyl, or lower acyl, such that the compound includes a maximum of three glycosides.

12. The method of claim 11, wherein said compound includes zero, one, or two glycosides, none of which is substituted with a further glycoside.

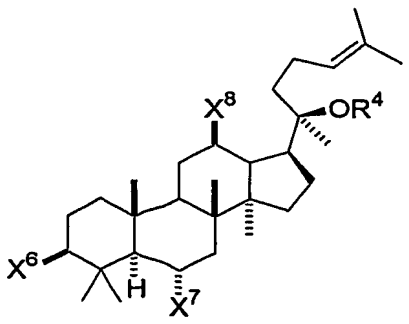
13. The method of claim 11, wherein each said glycoside, when present, is of the D configuration.

14. The method of claim 12, wherein each of X^4 and OR^3 is selected from hydroxy, lower alkoxy, lower acyloxy, and a glycoside, and X^5 is selected from hydroxy, lower alkoxy, lower acyloxy, and keto (=O).

15. The method of claim 12, wherein X^4 is OH or a glycoside, and each of X^5 and OR^3 is OH.

16. The method of claim 15, wherein X^4 is OH.

17. A method of increasing telomerase activity in a cell or tissue, comprising: identifying a cell or tissue in which an increase in telomerase activity is desired, and contacting said cell or tissue with a formulation of an isolated compound of formula III:



III

where:

each of X^6, X^7, and X^8 is independently selected from hydroxy, lower alkoxy, lower

acyloxy, keto, and a glycoside, and

OR^4 is selected from hydroxy, lower alkoxy, lower acyloxy, and a glycoside,

wherein any of the hydroxyl groups on said glycoside may be substituted with a further glycoside, lower alkyl, or lower acyl, such that the compound includes a maximum of three glycosides.

18. The method of claim 17, wherein said compound includes zero, one, or two glycosides, none of which is substituted with a further glycoside.

19. The method of claim 17, wherein each said glycoside, when present, is of the D configuration.

20. The method of claim 17, wherein each of X^6, X^7, X^8 and OR^4 is independently selected from hydroxy, lower alkoxy, lower acyloxy, and a glycoside.

21. The method of claim 20, wherein each of X^6, X^7, X^8 and OR^4 is independently selected from hydroxy and a glycoside.

22. The method of claim 21, wherein each of X^8 and OR^4 is OH, and each of X^6 and X^7 is independently selected from hydroxyl and a glycoside.

23. The method of claim 22, wherein each of OR^4, X^6 and X^8 is OH, and X^7 is a glycoside.

24. The method of claim 23, wherein the compound is ginsenoside RH1.

25. A method of treating a condition in a patient by increasing telomerase activity in cells or tissue of said patient, comprising administering to a patient in need of such treatment, a formulation of an effective amount of an isolated compound of formula I, as defined in claim 1, of formula II, as defined in claim 11, or of formula III, as defined in claim 17.

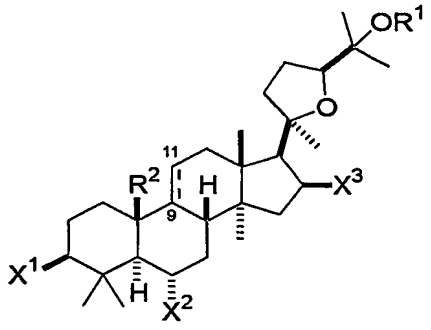
26. The method of claim 25, wherein said isolated compound is of formula I or formula II.

27. The method of claim 25, wherein said condition is HIV infection or a degenerative disease.

28. The method of claim 25, wherein said degenerative disease is selected from the group consisting of a neurodegenerative disease, a degenerative disease of the bones or joints, macular degeneration, atherosclerosis, and anemia.

29. The method of claim 25, wherein said condition is a wound or other acute or chronic condition of the epidermis.

30. A pharmaceutical composition comprising, in a pharmaceutically acceptable vehicle, a compound of formula I:



I

where:

each of X^1 and X^2 is independently selected from hydroxy, lower alkoxy, lower acyloxy, keto, and a glycoside;

X_3 is keto;

OR^1 is selected from hydroxy, lower alkoxy, lower acyloxy, and a glycoside;

wherein any of the hydroxyl groups on said glycoside may be substituted with a further glycoside, lower alkyl, or lower acyl, such that the compound includes a maximum of three glycosides; and

R^2 is methyl and ---- represents a double bond between carbons 9 and 11; or, R^2 forms, together with carbon 9, a fused cyclopropyl ring, and ---- represents a single bond

between carbons 9 and 11.

31. The composition of claim 30, wherein said compound includes zero, one, or two glycosides, none of which is substituted with a further glycoside.

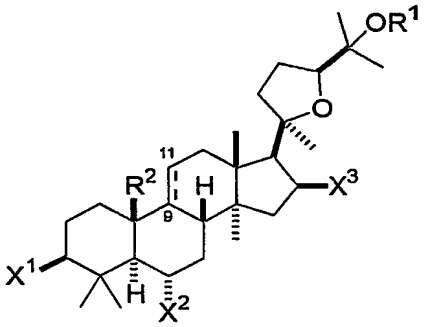
32. The composition of claim 30, wherein each said glycoside, when present, is of the D configuration.

33. The composition of claim 30, wherein R^2 forms, together with carbon 9, a fused cyclopropyl ring; and ---- represents a single bond between carbons 9 and 11.

34. The composition of claim 30, wherein X^1 is OH or a glycoside, and each of X^2 and OR^1 is independently OH or a glycoside.

35. The composition of claim 30, wherein the compound is astragaloside IV 16-one.

36. A pharmaceutical composition comprising, in a pharmaceutically acceptable vehicle, a compound of formula **I:**



I

where:

one of X^1 and X^2 is selected from hydroxy, lower alkoxy, lower acyloxy, and keto, and the other is a glycoside; and

each of X_3 and OR^1 is independently selected from hydroxy, lower alkoxy, lower acyloxy, and a glycoside;

wherein any of the hydroxyl groups on said glycoside may be substituted with a further glycoside, lower alkyl, or lower acyl, such that the compound includes a maximum of three glycosides; and

R^2 is methyl and ---- represents a double bond between carbons 9 and 11; or, R^2 forms, together with carbon 9, a fused cyclopropyl ring, and ---- represents a single bond between carbons 9 and 11.

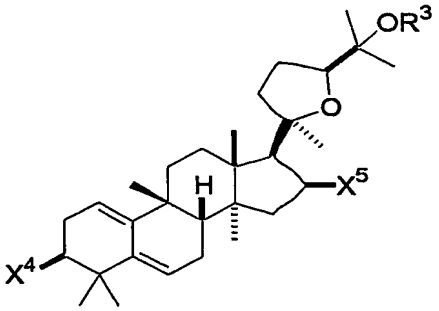
37. The composition of claim 36, wherein said compound includes one glycoside, which is not substituted with a further glycoside.

38. The composition of claim 36, wherein each said glycoside is of the D configuration.

39. The composition of claim 36, wherein R^2 forms, together with carbon 9, a fused cyclopropyl ring; and ---- represents a single bond between carbons 9 and 11.

40. The composition of claim 36, wherein said compound is selected from cycloastragenol 6-β-D-glucopyranoside (designated herein as **6**) and cycloastragenol 3-β-D-xylopyranoside (designated herein as 7).

41. A pharmaceutical composition comprising, in a pharmaceutically acceptable vehicle, a compound of formula **II**:



II

where:

each of X^4 and X^5 is independently selected from hydroxy, lower alkoxy, lower

acyloxy, keto, and a glycoside, and

OR^3 is selected from hydroxy, lower alkoxy, lower acyloxy, and a glycoside,

wherein any of the hydroxyl groups on said glycoside may be substituted with a further glycoside, lower alkyl, or lower acyl, such that the compound includes a maximum of three glycosides.

42. The composition of claim 41, wherein said compound includes zero, one, or two glycosides, none of which is substituted with a further glycoside.

43. The composition of claim 41, wherein each of X^4 and OR^3 is selected from hydroxy, lower alkoxy, lower acyloxy, and a glycoside, and X^5 is selected from hydroxy, lower alkoxy, lower acyloxy, and keto (=O).

44. The composition of claim 43, wherein X^4 is OH or a glycoside, and each of X^5 and OR^3 is OH.

45. The composition of any one of claims 30, 36, and 41, wherein said compound is present in said composition at a concentration of at least 0.1% (w/v).

46. A method of treating an acute or chronic condition of the epidermis, comprising contacting epidermal cells with a topical formulation of an isolated compound of formula I, as defined in claim 1, of formula II, as defined in claim 11, or of formula III, as defined in claim 17.

47. The method of claim 46, wherein said isolated compound is of formula I or formula II.

48. The method of claim 46, wherein said compound is present in said formulation at a concentration of at least 0.1% (w/v).

49. The method of claim 46, wherein said acute or chronic condition is selected from the group consisting of a wound, a burn, an abrasion, an incision, a graft site, a

lesion caused by an infectious agent, a chronic venous ulcer, a diabetic ulcer, a compression ulcer, a pressure sores, a mucosal ulcer, and keloid formation.

50. A pharmaceutical composition comprising a topical formulation of a an isolated compound of formula I, as defined in claim 1, of formula II, as defined in claim 11, or of formula III, as defined in claim 17.

51. The composition of claim 50, wherein said isolated compound is of formula I or formula II.

52. The composition of claim 50, wherein said compound is present in said formulation at a concentration of at least 0.1% (w/v).

53. The composition of claim 50, wherein said topical formulation comprises one or more components selected from the group consisting of an emulsifier, a thickener, and a skin emollient.

54. Use of an isolated compound of formula I, as defined in claim 1, of formula II, as defined in claim 11, or of formula III, as defined in claim 17, for the manufacture of a medicament for treating a disease subject to treatment by increasing telomerase activity in a cell or tissue.

55. The use of claim 54, wherein said disease is HIV infection or a degenerative disease.

56. The use of claim 55, wherein said disease is HIV infection.

57. The use of claim 55, wherein said degenerative disease is selected from the group consisting of a neurodegenerative disease, a degenerative disease of the bones or joints, macular degeneration, atherosclerosis, and anemia.

58. Use of a compound of formula I, as defined in claim 1, of formula II, as

defined in claim 11, or of formula III, as defined in claim 17, for the manufacture of a medicament for treatment of a chronic or acute condition of the epidermis.

59. The use of claim 58, wherein said acute or chronic condition is selected from the group consisting of a wound, a burn, an abrasion, an incision, a graft site, a lesion caused by an infectious agent, a chronic venous ulcer, a diabetic ulcer, a compression ulcer, a pressure sore, a mucosal sore or ulcer, and keloid formation.

60. The use of claim 54 or claim 59, wherein said isolated compound is of formula I or formula II.

61. The use of claim 60, wherein said compound is selected from astragaloside IV, cycloastragenol, astragenol, astragaloside IV 16-one, cycloastragenol 6-β-D-glucopyranoside, cycloastragenol 3-β-D-xylopyranoside, and 20R,24S-epoxy-3β,16β,25-trihydroxy-9β-methyl-19-norlanost-1,5-diene (designated herein as 5).

62. A method of enhancing replicative capacity of cells *in vitro* or *ex vivo*, comprising contacting said cells with a compound of formula I, as defined in claim 1, of formula II, as defined in claim 11, or of formula III, as defined in claim 17, in an amount effect to increase telomerase activity in said cells.

63. The method of claim 62, wherein said compound is of formula I or formula II.

64. The method of claim 62, wherein said compound is selected from astragaloside IV, cycloastragenol, astragenol, astragaloside IV 16-one, cycloastragenol 6-β-D-glucopyranoside, cycloastragenol 3-β-D-xylopyranoside, and 20R,24S-epoxy-3β,16β,25-trihydroxy-9β-methyl-19-norlanost-1,5-diene (designated herein as 5).

65. The method of claim 62, wherein said cells are explant cells obtained from a patient.

66. The method of claim 62, wherein said cells are stem cells.

67. The method of claim 62, wherein said cells are HIV-restricted $CD8^+$ cells.

68. The method of claim 62, wherein said cells are selected from bone marrow stromal cells, adrenocortical cells, muscle satellite cells, osteoblasts, retinal pigmented epithelial cells, and chondrocytes.

69. A method of selecting a compound effective to increase telomerase activity in a cell, comprising

testing a derivative of a compound of formula **I**, as defined in claim 1, of formula **II**, as defined in claim 11, or of formula **III**, as defined in claim 17, for ability to increase telomerase activity in keratinocytes or fibroblasts, as measured in a TRAP assay, and selecting the derivative if it is effective to produce a level of telomerase activity in keratinocytes or fibroblasts, at a concentration of 1 μg/ml in a solvent, at least 50% greater than that measured in said cells treated with said solvent, as measured in said TRAP assay.

70. The method of claim 69, wherein said derivative is selected if it is effective to produce a level of telomerase activity in keratinocytes or fibroblasts, as measured in a TRAP assay, at a concentration of 1 μg/ml in a solvent, at least 100% greater than that measured in said cells treated with said solvent, as measured in said TRAP assay.

71. The method of claim 69, further comprising the step of formulating the selected derivative with a topical, nutraceutical or pharmaceutical vehicle.

72. A method of selecting an agent for treatment of acute or chronic conditions of the epidermis, comprising

testing a derivative of a compound of formula **I**, as defined in claim 1, of formula **II**, as defined in claim 11, or of formula **III**, as defined in claim 17, for wound healing activity, in a scratch assay of keratinocytes or fibroblasts, and selecting the derivative if it has a wound healing activity, at a concentration of 1 μg/ml, at least 50% greater than that of a solvent control.

73. The method of claim 72, wherein said derivative is selected if it has a wound healing activity as measured in a scratch assay, at a concentration of 1 μg/ml, at least 100% greater than that of a solvent control.

74. The method of claim 73, further comprising the step of formulating the selected derivative with a topical vehicle.

75. A nutraceutical composition comprising a nutraceutical formulation of an isolated compound of formula I, as defined in claim 1, of formula II, as defined in claim 11, or of formula III, as defined in claim 17.

76. The composition of claim 75, wherein said isolated compound is of formula I or formula II.

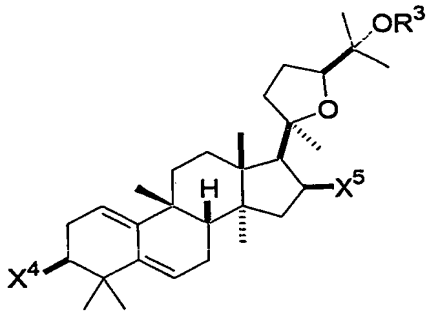
77. The composition of claim 76, wherein said compound is selected from astragaloside IV, cycloastragenol, astragenol, astragaloside IV 16-one, cycloastragenol 6-β-D-glucopyranoside, cycloastragenol 3-β-D-xylopyranoside, and 20R,24S-epoxy-3β,16β,25-trihydroxy-9β-methyl-19-norlanost-1,5-diene (designated herein as 5).

78. The composition of claim 75, wherein said nutraceutical formulation comprises, in addition to said compound, a nutraceutical herbal extract.

79. The composition of claim 78, wherein said extract is an extract of *Astragalus membranaceus*.

80. The composition of claim 75, wherein said isolated compound is present in said formulation at a concentration of at least 0.1% (w/v).

81. A compound of formula II:



II

where:

each of X^4 and X^5 is independently selected from hydroxy, lower alkoxy, lower acyloxy, keto, and a glycoside, and

OR^3 is selected from hydroxy, lower alkoxy, lower acyloxy, and a glycoside,

wherein any of the hydroxyl groups on said glycoside may be substituted with a further glycoside, lower alkyl, or lower acyl.

82. The compound of claim 81, wherein said compound includes zero, one, or two glycosides.

83. The compound of claim 81, wherein each said glycoside, when present, is of the D configuration.

84. The compound of claim 81, wherein each of X^4 and OR^3 is selected from hydroxy, lower alkoxy, lower acyloxy, and a glycoside, and X^5 is selected from hydroxy, lower alkoxy, lower acyloxy, and keto (=O).

85. The compound of claim 81, wherein X^4 is OH or a glycoside, and each of X^5 and OR^3 is OH.

86. The compound of claim 85, wherein X^4 is OH.